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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,525	04/19/2001	Feng Lin	303.734US1	9450

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EXAMINER

BUTLER, DENNIS

ART UNIT	PAPER NUMBER
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2115

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/838,525

Applicant(s)

LIN, FENG

Examiner

Dennis M. Butler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2001.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 14-19 is/are allowed.  
6) ☒ Claim(s) 1,2,7,8,13 and 20-43 is/are rejected.  
7) ☒ Claim(s) 3-6 and 9-12 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

1. This action is in response to the application filed on April 19, 2001. Claims 1-43 are pending.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 21-24, 29-31 and 33-43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 21, the phrase "the forward path" lacks proper antecedent basis.

Regarding claim 22, the phrase "the feedback path" lacks proper antecedent basis.

Regarding claim 23, the phrase "the model circuit" lacks proper antecedent basis.

Regarding claim 24, the phrases "the capture clock signal" and "the feedback signals" lack proper antecedent basis.

Regarding claims 29 and 30, the phrase "the output data signal" lacks proper antecedent basis.

Regarding claim 31, the phrase "the first DLL" lacks proper antecedent basis.

Regarding claim 33, the phrases "the internal clock signal" and "the internal data signal" lack proper antecedent basis.

Claims 34-37 are rejected because they incorporate the deficiencies of claim 33.

Regarding claim 37, the phrase "the clock receiver" lacks proper antecedent basis.

Regarding claim 38, the phrases "the input clock signal" and "the data signal" lack proper antecedent basis.

Regarding claim 39, the phrase "the feedback signals" lacks proper antecedent basis.

Regarding claim 40, the phrase "the input clock signal" lacks proper antecedent basis.

Claim 41 is indefinite as to which claim it further limits because it depends on non-existent claim 60. Claims 42 and 43 are rejected because they incorporate the deficiencies of claim 41.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-2, 7-8, 13, 20, 25-28, 31-33, 35-36, 38 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al., U. S. Patent 5,964,880 in view of Lau et al., U.S. Patent 6,469,555.

Per claims 1, 7, 13, 20, 25-28, 31-33, 35-36, 38 and 40:

Liu et al describe receiving an external clock (reference clock source 25) to produce an internal clock (clock input to PLL 105) with figure 2. Liu et al describe a first DLL (elements 105, 120, 130 and 135) that receives the internal clock and produces an output clock (signal 125) that is phase shifted with the internal clock with figure 2. Liu et al describe a feedback path providing a feedback signal to the first DLL with path 145 of figure 2. Liu et al describe a second DLL (elements 110, 115 and 140) that receives the output clock and generates a capture clock (clock 150) with figure 2. Liu et al describe a feedback path that receives the capture clock to produce a feedback signal with path 155 of figure 2. Liu et al describe a memory controller (controller 100) and a memory (memory 30 and 35) with figures 2 and 3. Liu et al describe a processor at column 1, lines 11-16. Liu et al describe a data receiver (I/O channels) that receive external data and produce an internal data signal and is clocked using the capture clock (clock 150) with figure 2. See column 3, line 22 – column 5, line 42. The claims seem to differ from Liu et al in that Liu et al fail to explicitly teach the output clock being 90 degrees out of phase with the internal clock and the second DLL being selectively connected to receive the output clock as claimed. Liu et al describe providing fixed delay 130 for delaying the output clock by a fixed amount so that it is out of phase with the internal clock by a fixed amount. Therefore, Liu et al discloses the claimed invention except for explicitly reciting that delay 130 provides a phase shift of 90 degrees with the internal clock. Lau et al teach that it is known to provide a phase shift of 90 degrees with an internal clock with figure

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2 and at column 1, lines 44-67. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a phase shift of 90 degrees with an internal clock, as taught by Lau et al, in order to ensure that the clock edge is aligned with the center of each data signal. One of ordinary skill in the art would have been motivated to combine Liu et al and Lau et al because of Lau et al suggestion that providing a 90 degree phase shift to a clock will center the clock edge on a data signal and provide proper sampling of the data signal at column 1, line 44-67 and at column 2, lines 1-39. It would have been obvious for one of ordinary skill in the art to combine Liu et al and Lau et al because they are both directed to the problem of synchronizing clock signals in order to properly sample data to or from a memory device.

Per claims 2 and 8:

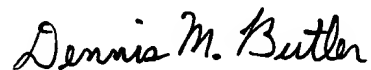
Lau et al describe aligning an external clock edge with external data with figure 2, at column 1, line 44-67 and at column 2, lines 1-39.

6. Claims 3-6 and 9-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. Claims 14-19 are allowable over the art of record because the art of record does not teach or suggest the combination of recited elements.
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis M. Butler whose telephone number is 703-305-

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9663. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

A handwritten signature in black ink that reads "Dennis M. Butler". The signature is written in a cursive style with a large, stylized "D" and "B".

Dennis M. Butler  
Primary Examiner  
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